REMARKS

In view of the above amendments and the following remarks, reconsideration and further examination are respectfully requested.

I.   Amendments to the Claims

By this Amendment, claims 2 and 3 have been cancelled without prejudice or disclaimer of the subject matter contained therein.

Further, independent claims 1 and 12 have been amended to clarify features of the invention recited therein and to further distinguish the present invention from the references relied upon in the rejections discussed below.

Moreover, claims 9 and 10 have been amended to satisfy the enablement requirement. Support for these amendments can be found, at least, in paragraph [0058] of the specification.

II.   35 U.S.C. § 102 and §103 Rejections

Claims 1-5, 7, 8 and 12-15 were rejected under 35 U.S.C. § 102(b) as being anticipated by Dowdell. Further, claims 6, 9, 10 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dowdell in view of various combinations of Narayanaswami and Andrews. These rejections are believed clearly inapplicable to amended independent claims 1 and 12 and the claims that depend therefrom for the following reasons.

Amended independent claim 1 recites a three-dimensional shape drawing device including a depth value calculation section for calculating a depth value of a pixel to be drawn, a high order Z-buffer memory for retaining high order bits of a depth value of a pixel to be displayed as a front face, and a low order Z-buffer memory for retaining low order bits of the

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depth value of the pixel to be displayed as the front face, such that a number of the low order bits is equal to or larger than a number of the high order bits retained in the high order Z-buffer memory. Claim 1 also recites that the shape drawing apparatus includes a lower order bit comparing section that reads the lower order bits of the depth value of the pixel to be displayed as the front face and retained in the lower order Z-buffer memory and compares the read low order bits with low order bits of the depth value calculated by the depth value calculation section. In addition, claim 1 recites that the shape drawing device includes a pixel value calculation section for calculating a pixel value (which is information about the pixel to be drawn) and includes an image memory for retaining the pixel value calculated by the pixel value calculation section. Finally, claim 1 recites that the pixel value calculation section calculates the pixel value when (i) a result of comparing performed by a high order bit comparing section indicates that a depth indicated by the high order bits of the depth value calculated by the depth value calculation section is shallower than a depth indicated by the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory and (ii) the result of the comparing performed by the low order bit comparing section indicates that the low order bits of the depth value calculated by the depth value calculation section have a same value as the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory.

Initially, the Applicants note that the Dowdell reference was relied upon for disclosing the above-noted distinguishing limitations now recited in claim 1. However, it is respectfully submitted that Dowdell fails to disclose or suggest the above-mentioned distinguishing features recited in amended independent claim 1.

Rather, Dowdell merely teaches that two variables, REPLACED and DECISION-COMPLETE, indicate whether or not a new Z-value has replaced an old Z-value in an entry to which they correspond, and indicate whether or not a decision has been made to replace the Z-value (see col. 7, section III. Method and Apparatus in a Parallel Implementation). Further, Dowdell teaches that the above-noted features are implemented to achieve parallel processing.

Thus, in view of the above, it is clear that Dowdell teaches that a variable indicates whether the new Z-value has replace the old Z-value and whether or not a decision has been made, but fails to disclose or suggest that the pixel value calculation section calculates the pixel value when (i) the result of the comparing performed by the high order bit comparing section indicates that the depth indicated by the high order bits of the depth value calculated by the depth value calculation section is shallower than the depth indicated by the high order bits of the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory and (ii) the result of the comparing performed by the low order bit comparing section indicates that the low order bits of the depth value calculated by the depth value calculation section have a same value as the low order bits of the depth value of the pixel to be displayed as the front face and retained by the low order Z-buffer memory, as recited in claim 1.

Therefore, because of the above-mentioned distinctions it is believed clear that claim 1 and claims 4-10 that depend therefrom would not have been obvious in view of Dowdell,

Furthermore, there is no disclosure or suggestion in Dowdell or elsewhere in the prior art of record which would have caused a person of ordinary skill in the art to modify Dowdell to obtain the invention of independent claim 1. Accordingly, it is respectfully submitted that independent claim 1 and claims 4-10 that depend therefrom are clearly allowable over the prior art of record.

Regarding dependent claims 6, 9, 10 and 16, which were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dowdell in view of various combinations Narayanaswami and Andrews (secondary references), it is respectfully submitted that these secondary references do not disclose or suggest the above-discussed features of independent claim 1, which are lacking from the Dowdell reference. Therefore, no obvious combination of Dowdell with the secondary references would result in, or otherwise render obvious, the invention recited independent claim 1 and the claims that depend therefrom.

Amended independent claim 12 is directed to a method and recites features that correspond to the above-mentioned distinguishing features of independent claim 1. Thus, for the same reasons discussed above, it is respectfully submitted that independent claim 12 and claims 13-16 that depend therefrom are allowable over the prior art of record.

III.   Conclusion

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance and an early notification thereof is earnestly requested. The Examiner is invited to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,

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